



west virginia department of environmental protection

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Water Management Plan/Water Addendum

Preparation Instructions

Introduction:

Pursuant to W. Va. Code § 35-8 *et. seq.*, natural gas operators developing horizontal wells which will use more than two hundred ten thousand (210,000) gallons of water in any month (calendar month) shall submit a Water Management Plan with their Well Work Permit Application.

Operators should carefully consider where they will obtain their water from, what months the water will be needed and how to minimize demands on transportation and other public infrastructure. DEP strongly encourages that operations be planned in such a manner to allow withdrawals from streams in periods of traditionally higher stream flows (typically November through June).

DEP's approval of a withdrawal location conveys no property or riparian rights. Further, as DEP's methods for determining available amounts of water are based on statistically derived estimates and basin relationships, the DEP shall not be held liable if impacts to aquatic life from the withdrawal activity occur. It always remains the operator's responsibility to ensure protection of aquatic life.

It is important to note that information submitted in the plan will be considered conditions of the permit and be enforceable as such. If at any point in the withdrawal process the location or other specifics should change, a plan modification request must be submitted and approved by DEP, before using an alternate location or amount.

All requests for modifications to the plan should be made in writing to the Office of Oil and Gas at least sixty (60) days in advance of said change to avoid operational delays. Please include the Water Management Plan number (WMP-XXXXXX) with any correspondence to the Agency.

Be advised that any terms for water withdrawal established within the Water Management Plan/Water Addendum approval document will supersede any determinations made by the DEP's previously used voluntary Water Withdrawal Guidance Tool. Please note that the Water Management Plan/Water Addendum will become part of the permit and the terms for withdrawal established therein are enforceable as such.

West Virginia 35 C.S.R. 8 also mandates that prior to beginning of withdrawal, 24 to 48 hours advance notice shall be given to the DEP. This process should be initiated by an e-mail to dep.water.use@wv.gov. The e-mail should include the contact name and telephone number for reply. Upon receipt of the e-mail request DEP will review the information and contact the operator with a final approval. West Virginia 35 C.S.R. 8 also requires signage at every withdrawal location. A copy of West Virginia 35 C.S.R. 8 can be obtained from <http://www.sos.wv.gov/administrative-law/emergencyrules/Documents/35-08.pdf>.

Additionally, the "Well Work Permit Application Addendum" (also known as the Water Addendum) has now been fully incorporated into the Water Management Plan/Water Addendum. Please use the Water Management Plan/Water Addendum form for all matters formerly handled by use of the Water Addendum.

Please recognize that this is a new process and the DEP may need to make future modifications when presented with future situations. Please direct any questions concerning the Water Management Plan/Water Addendum to the Office of Oil and Gas.

Plan Preparation:

In order to facilitate plan development, DEP is providing this written instruction sheet and an application form. DEP will review the information provided for accuracy and notify the applicant if additional information is required. Based on the information provided by the applicant, DEP will provide an estimate of how much water should be available at the referenced withdrawal point during the proposed withdrawal date range. This will be an estimate of available water based on historical flows in nearby representative streams adjusted by a proportional ratio of the target basin to the reference basin.

Applicants are reminded that prior to the beginning of a withdrawal, DEP must be notified 24 to 48 hours before the withdrawal is to begin. This notification will allow the DEP an opportunity to verify if conditions upon which the water withdrawal calculations and/or underlying assumptions have changed. Also, DEP must be notified 24 to 48 hours after withdrawals have ceased at the location.

Operators are reminded that pursuant to West Virginia 35 C.S.R. 8-4.2.b, a sign, that discloses that the location is a water withdrawal point and the name and telephone number of the operator, must be erected and maintained at each withdrawal location.

Operators are also reminded that permanent withdrawal locations that have a structure built in stream may need a US Army Corps of Engineers section 404 permit, a WVDEP section 401 certification, or a WV Public Lands Right-of Entry permit.

Information To Be Included In The Plan:

(This information must be provided for each withdrawal location)

Section I – Operator Information:

The operator information should include: the operator name, operator ID, mailing address, contact name and e-mail address (water resources manager or similar). Additionally a checkbox has been provided to indicate if the company has registered with the Water Use Section to use the Frac Water Reporting Website. If not, the company should contact the DEP Water Use Section at dep.water.use@wv.gov to be registered.

Section II – Well Overview:

This section should include: the operator's well number, anticipated frac date, county, latitude and longitude of the well. The latitude and longitude coordinates must be reported in decimal degrees to the sixth place and be in the North American Datum (NAD) 83 coordinate plane.

Section III – Source Water Overview:

Select all potential water sources from the following: stream/river, lake/reservoir, groundwater well, purchased water (PSD), purchased water (private), recycled frac water, multi-site impoundment, or other. The total anticipated water volume to be used must be indicated in this section (gal).

Section III(a) – Surface Water Source: (Please include one page per intake location and submit additional pages as necessary)

General information:

Provide the water body name (e.g Laurel Run), latitude and longitude of each withdrawal location and the county of the withdrawal location. The latitude and longitude coordinates must be reported in decimal degrees to the sixth place and be in the North American Datum (NAD) 83 coordinate plane.

With respect to land ownership at the withdrawal location, it is the operator's responsibility to ensure all necessary permissions have been obtained. Provide the name, address, and telephone number of the real property owner at the withdrawal location. If the land is in public ownership, please provide documentation of permission to withdrawal from the appropriate office.

The start date, end date, anticipated volume of the withdrawal in gallons, and the maximum pump rate in gallons per minute are required in this section. If multiple pumps will be used at one time, submit the total maximum pumping capacity. If utilizing multiple pump trucks for water withdrawals please indicate the maximum pump rate per truck and the total number of trucks that could be simultaneously withdrawing. (Reminder - Operators withdrawing in excess of this reported value would be in violation of the permit).

Determination of estimated water availability:

Calculation of an adequate pass-by flow to protect aquatic life for each withdrawal location is one of the most important and least understood aspects of a Water Management Plan/Water Addendum. While several possibilities may exist for accomplishing this requirement, DEP prefers applicants allow the agency to estimate the volume of water available for withdrawal over the date range. DEP's estimate will take into account, to the extent possible, flows necessary to protect aquatic life, the location of existing withdrawals and the anticipated future demand for water in the area including a margin of safety.

For each withdrawal point, a nearby USGS gauge will be selected as a reference gauge and the statistics from that gauge will be transferred to the withdrawal site. A target gauge discharge value in cubic feet per second (cfs) will be provided based on the withdrawal point location and maximum potential pump rate specified in the Water Management Plan/Water Addendum. There *should be* enough water available for the withdrawal if the discharge at the USGS reference gauge is greater than or equal to the calculated target discharge in cubic feet per second (cfs). (Reminder – Operators withdrawing water when the target gauge reading is below the recommended value will be considered in violation of the permit).

Many larger rivers in West Virginia have flows regulated by US Army Corps of Engineers dams. Withdrawals from regulated waters may be permissible, but only when flow rates are above guaranteed minimums. For example, discharge pollution permits in Charleston are prefaced on a minimum flow on the Kanawha River to be maintained by the Corps. During dry periods when the Corps is augmenting stream flow to meet these pollution dilution requirements, withdrawals shall not occur--even when there is seemingly a large quantity of water available. DEP's estimation of water availability will be reflective of minimum guaranteed flows across the state.

Some entities have elected to have a stream gage installed by the US Geological Survey, working cooperatively with DEP, to estimate water availability more accurately. DEP and the USGS have an interest in this process as it provides state and federal resource agencies with needed water data. This arrangement potentially allows more water to be available to the operator as uncertainties in available water estimates are reduced. The initial cost for this arrangement is approximately fifty thousand dollars (\$50,000) for the first year and twenty thousand dollars

(\$20,000) for each continuing year with a minimum five (5) year requirement. Persons interested in learning more should contact DEP's Water Use Section at dep.water.use@wv.gov.

Aquatic life:

Many streams throughout the state are home to a variety of sensitive and/or endangered aquatic species. For withdrawals on streams containing such species, particular care must be taken to protect aquatic life. If DEP indicates that a proposed intake point is on a stream containing sensitive aquatic life, it is recommended that the operator contact US Fish and Wildlife Service and/or WV Division of Natural Resources for more information. These agencies have regulatory authority to levy fines and other punitive measures in the event that mussels and/or endangered species are harmed.

Further, describe your plan or mechanism to protect against entrainment and/or impingement of aquatic life. Also, your plan or mechanism to eliminate the possibility of invasive species transfer must be detailed.

Section III(b) – Groundwater Source:

Operators are reminded that pursuant to West Virginia 35 C.S.R. 8-4.1.d. that any newly drilled water supply well must be installed and closed in accordance with West Virginia Department of Health and Human Resources' (DHHR) requirements for a drinking water well. The following general information is required on the water plan form: latitude and longitude of the well in decimal degrees, the water well permit number (provided by County Health Department), well name, county, proof of landowner permission, total depth of the well, type of casing, casing diameter, screen interval and size of opening, water elevation during drilling, static water elevation after drilling, top of casing elevation, surface elevation, and type of well cap. The date range of the planned withdrawal, total expected volume of water to be withdrawn, and the maximum pump rate should also be reported.

In order to ensure proper protection against aquifer depletion, you must provide an evaluation of the ground water resources including an aquifer test and an assessment of potential local impacts to the groundwater source. The testing and assessment should include groundwater yield testing providing the static water surface elevation prior to pumping, the pump rate (gpm), hours of the pump test, water elevation during pump test, and the time required to return to the original static water level. Aquifer depletion, leading to complaints from the area well owners, should be given due consideration by operators contemplating using this source.

Section III(c) – Purchased Water Source:

If any water is purchased, the name of the facility, type of facility, facility address, and contact information must be included in the plan. The proposed dates for purchase, total volume of water to be purchased, the maximum daily amount of water to be purchased and supplier intake details (other than Wastewater Treatment Plants and Public Water providers) must be included in the plan. It should be noted that the supplier should also keep records of the total quantity of water sold as this information may be required on the large quantity user certification report.

Section III(d) – Lake/Reservoir Water Source:

Due to ownership concerns and the high variability of design, DEP will not calculate available water from a lake or reservoir. Operators should instead seek agreement with the owner of the lake or reservoir prior to submission of the Water Management Plan/Water Addendum. This agreement must be included with the plan submittal. After acquiring owner's permission, the following information should be included within the Water Management Plan/Water Addendum: name of lake/reservoir, county, latitude and longitude of the dam, owner's contact information, withdrawal start and end dates, total volume of withdrawal, and maximum pump rate (gpm).

Further, describe your plan or mechanism to protect against entrainment and/or impingement of aquatic life. Also, your plan or mechanism to eliminate the possibility of invasive species transfer must be detailed herein.

Section III(e) – Multi-Site Impoundment:

Plan for handling multi-site impoundments:

New impoundments serving multiple well sites will be reviewed under the umbrella of a "watershed plan". A multi-site impoundment will be registered by a Water Management Plan number (WMP-XXXXX) obtained after filing a Water Management Plan/Water Addendum for the first well. Subsequent wells using this pond may refer to the WMP number as the source detail, but must include all other details required in the Water Management Plan/Water Addendum.

For existing multi-site impoundments, the information pertaining to the existing multi-site impoundment that should be submitted with the Water Management Plan/Water Addendum for the first well withdrawing from the existing multi-site impoundment includes the following: impoundment name, owner name, owner's contact information, temporary or permanent structure, county, latitude and longitude of the center of the impoundment, source name, maximum pump rate at each source, watershed, maximum capacity of impoundment, filling schedule and confirmation that the impoundment is registered as a Large Quantity Industrial User with the DEP. Subsequent wells using this pond may refer to the WMP number as the source detail, but must include all other details required in the Water Management Plan/Water Addendum.

Section III(f) – Reused Frac Water:

Fill in the API number of well where the reused water is coming from, total volume of reused water and date range of water transfer. If the reused water is coming from a centralized pond, indicate the Water Management Plan/Water Addendum number in place of the API number and make a note of it in the Operators comments section VII.

Section IV – Planned Disposal Method:

Please indicate the planned disposal method(s) for fracwater and produced water including the following information: Underground Injection Control well (name, latitude and longitude, permit number), NPDES facility (name, latitude and longitude, permit number), Re-use (name, latitude and longitude, API number). If the fracwater is going to be reused and is being sent to a centralized pond, indicate the Water Management Plan/Water Addendum number for the centralized pond in place of the API number and make a note of it in the Operators comments section VII. The disposal method will be evaluated by the Office of Oil and Gas.

Section V – Planned Additives to be used in Fracturing or Stimulations:

Please attach a list of the planned additives for review by the Office of Oil and Gas.

Section VI – Description of Time Frame Requirements for Modifying WMP:

Once a Water Management Plan/Water Addendum is submitted and approved by the DEP, any modification of that plan will require written request submitted to the Office of Oil and Gas at least sixty (60) days prior to the anticipated withdrawal date.

Section VII – Operators Comments